GOVERNMENT OF INDIA
PETROLEUM AND NATURAL GAS
LOK SABHA

UNSTARRED QUESTION NO:2440
ANSWERED ON:31.07.2017
Hydrogen Generation by ONGC
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Will the Minister of PETROLEUM AND NATURAL GAS be pleased to state:

(a) whether Oil and Natural Gas Corporation Limited has received patent from United States of America for hydrogen generation process and if so, the details thereof along with the likely benefits of the said development to increase use of clean and efficient energy in transportation and power generation process;
(b) the challenges envisaged by the Government in power generation through the said source; and
(c) whether the Government proposes for monetisation of the said proposal and if so, the details thereof along with action taken in this regard?

Answer

MINISTER OF STATE(INDEPNDENT CHARGE) IN THE MINISTRY OF PETROLEUM & NATURAL GAS (SHRI DHARMENDRA PRADHAN)
(a) to (c) ONGC Energy Centre Trust (OECT) set up by Oil and Natural Gas Corporation (ONGC) Limited, jointly with the Institute of Chemical Technology (ICT), Mumbai received three patents relating to Hydrogen generation process in United States of America. The details of the three patents are as under:

Sl. No.	Patent title	US Patent No. and date
1	Hydrogen Production Method by Multi-Step Copper-Chlorine Thermochemical Cycle	US 8968697 B2 Date: 03.03.2015
2	Electrochemical Cell used for the Production of Copper using Cu-Cl Thermochemical Cycle	US 9447512 B2 Date: 20.09.2016
3	Effect of operating Parameters on the Performance of Electrochemical Cell in Copper-Chlorine Cycle	US 9487876 B2 Date: 08.11.2016

This patented process is based on Thermochemical Splitting of Water to produce Hydrogen that involves high temperatures. Solar energy is to be used as the heat source for the Thermochemical process. The demonstration of hydrogen production process using solar heat and heat storage is yet to be done by OECT and ICT. Hydrogen is a carrier of energy and can be used to produce electricity through Fuel Cells for use in transportation and also for power generation in a clean manner. Hydrogen can also be used in IC engines.
There are several challenges including cost effectiveness and long life fuel cells for use in stationary power generation. The other challenges relate to storage, transportation and dispensation of hydrogen, optimization of IC engines etc.
So far the Thermochemical Splitting of Water to produce Hydrogen has not been commercially exploited anywhere in the world. At present, there is no specific proposal for monetization of the process, as more development is still required.
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